REMARKS

Amended claim 1 is based in claims 1, 9 and 10 as previously presented and claims 9 and 10 have been cancelled accordingly.

Claim 13 has been amended to be dependent from claim 12 instead of claim 10.

Claims 1, 4, 5, 8, 11 and 12 stand rejected under 35 U.S.C. 102(b) as being anticipated by Minoura et al. (Japanese Publication No. 10-092422).

The objections have been rendered moot by the amendment of claim 1, as the objections under 35 U.S.C. 102(b) in view of Minoura et al. were not raised against claims 9 and 10 as previously presented. Indeed, Minoura et al. discloses a hydrogen storage alloy to which calcium carbonate is added. However, calcium carbonate is added to the active material as a layer in order to suppress the generation of an oxygen gas on a hydrogen storage alloy electrode. Therefore, the calcium carbonate is not added as a catalyst, but as a protective <u>layer</u> on an electrode. For this reason, the calcium carbonate cannot have a nanocrystalline structure. Furthermore, Minoura et al. also does not disclose that the hydrogen storage material itself has a nanocrystalline structure. Hence, the subject-matter of claim 1 as amended is not anticipated by Minoura et al.

Claims 1, 4, 5 and 7 to 11 stand rejected under 35 U.S.C. 102(b) as being anticipated by Ogura et al. (U.S. Patent No. 6,171,727). As correctly stated by the Examiner, Ogura et al. teaches a hydrogen storage alloy with its surface covered by a <u>layer</u> containing at least carbonate. The carbonate-containing layer is also added as a protective layer in order to prevent overcharging of an alkaline secondary battery, and not as a catalyzing agent (cf. col. 4, lines 6 to 11). Column 4, lines 49 to 53 of Ogura et al. discloses that the particle size of the granule carbonate is preferably between 0.1 and 5 micrometers. However, Ogura et al. does not disclose the particle size of the metalliferous material itself.

Furthermore, a particle size of between 0.1 and 5 micrometers is beyond what a person skilled in the art would understand as having a nanocrystalline structure. In this connection, we refer to C. Suryanarayana “Mechanical alloying and milling”, Progress in Materials Science 46 (2001), 1 – 184, a copy of which is attached as Exhibit A. On page 122, Chapter 12. Nanocrystalline materials are defined as follows:

> *"Nanocrystalline materials are single-phase or multi-phase materials, the crystal size of which is of the order of a few (typically 1-100) nanometers in at least one dimension."*

Accordingly, also the carbonates according to Ogura et al. do not have a nanocrystalline structure.

From the above it follows, that claim 1 as amended is also not anticipated by Ogura et al.

Finally, claims 1, 12 to 21, and 24 to 27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Klassen et al. (U.S. Patent No. 6,752,881) in view of Minoura et al. (Japanese Publication No. 10-092422). As correctly stated by the Examining Division, Klassen et al. teaches metalliferous hydrogen-storing materials which contain metal oxides at the catalyst (cf. col. 2, lines 40 to 49). It does not teach or suggest to use a metal carbonate as a catalyst. Such prior art is acknowledged in [0004] of the present application (we refer to US 2007/0068342 A1). However, as stated in said paragraph for certain cases of application, the species-appropriate metalliferous, hydrogen storing material containing a catalyzing agent in the form of a metal oxide is not sufficient with respect to any desired and/or necessary rate of reaction during the hydrogenation and dehydrogenation, particularly since catalyzing agents based on nitrides, oxides and carbides reduce a weight related storage capacity of the hydrogen-storing material as a result of the particularly high densities. Furthermore, Fig. 1 and 2 (cf. [0026]-[0027] of the present application) show a comparison in the hydrogen absorption kinetics and hydrogen desorption kinetics of magnesium with a carbonate and an oxide, respectively. With reference to Fig. 1, it can be seen that, by means of the catalyzing agent according to the invention in the form of a metal carbonate, much more rapid hydrogen absorption kinetics can be achieved than with the best oxidic catalyst used so far (cf. [0030]). Moreover, it is possible by means of the catalyzing agent according to the invention based on metal carbonates, to carry out the hydrogenation of the metalliferous hydrogen-storing material at temperatures which are considerably lower in comparison with catalyzed reactions based on catalyzing agents of the metal oxide type.

The use of metal carbonates in order to further improve the hydrogen absorption and desorption kinetics of the metalliferous hydrogen-storing material in view of the metal oxides

taught by Klassen et al. is not rendered obvious by Minoura et al. As already stated, Minoura et al is not concerned in any way with the catalysis of the absorption and desorption kinetics, but the metal carbonates are used as a protective layer on the surface of the metalliferous hydrogen-storing material. Hence, Minoura et al. cannot render obvious the use of the hydrogen-storage material in order to improve the hydrogen absorption and desorption kinetics of the hydrogen storage material.

Further, since the calcium carbonate is used as a protective material, the person skilled in the art would not expect that a metal carbonate could act as a catalyst and accordingly, motivated by the teachings of Minoura et al. would not reasonably expect that calcium, in the form of carbonate having a nanocrystalline structure, could perform as a catalyst.

The objections against claims 20 and 23 as being depend upon a rejected base-claim are rendered moot by the amendments.

It is submitted that all claims are now of proper form and scope for allowance. Early and favorable consideration is respectfully requested.

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